

CLAIMS

1. A portable drill hole measuring device comprising:
a frame (2);
at least one sensor (6);
an elongated transmission element (5) connected to the sensor (6);
at least one transfer device (4), by which the transmission element (5) can be moved longitudinally in at least one direction for moving the sensor (6) in the drill hole (12), **characterized** in that
the measuring device (1) includes an elongated protective element (3) and
that the sensor (6) is arranged to be moved into the protective element (3) by means of the transfer device (4).
2. A measuring device as claimed in claim 1, **characterized** in that at a first end of the protective element (3) there is a conical portion (13), which can be inserted into the drill hole (12) at least partly.
3. A measuring device as claimed in claim 1 or 2, **characterized** in that at the first end of the protective element (3) there is at least one support piece (10), which is arranged to hold the protective element (3) in a desired position.
4. A measuring device as claimed in any one of the preceding claims, **characterized** in that the protective element (3) is designed at least for its first end portion such that the protective element (3) can be inserted at least partly into the drill hole (12).
5. A measuring device as claimed in any one of the preceding claims, **characterized** in that the protective element is a tubular piece.
6. A measuring device as claimed in any one of the preceding claims, **characterized** in
that the transmission element (5) is a flexible, elongated piece, and
that the transfer device (4) comprises a reel (8), around which the transmission element (5) can be wound.
7. A measuring device as claimed in claim 6, **characterized** in that the reel (8) is provided with a handle (15) for rotating the reel (8) manually.
8. A measuring device as claimed in claim 6, **characterized** in that the transfer device (4) comprises a motor (7) for rotating the reel (8).

9. A measuring device as claimed in any one of the preceding claims, **characterized** in that the measuring device (1) comprises at least one actuator (21) for pushing the protective element (3) partly into the drill hole (12).

10. A measuring device as claimed in any one of claims 1 to 5, **characterized** in

that the transmission element (5) is a flexible, elongated piece,

that the measuring device (1) comprises a container (40), which is arranged stationary with respect to the frame of the measuring device (1), for storing the transmission element (5),

that the transfer device (4) comprises at least one roll, which is arranged to move the transmission element (5) in the longitudinal direction by friction, and

that the transmission element (5) is arranged to settle within the space delimited by the inner surface (43) of the container (40).

11. A measuring device as claimed in any one of the preceding claims, **characterized** in

that the transmission element (5) is a flexible, elongated piece,

that the measuring device (1) comprises a container (40), which is arranged stationary with respect to the frame of the measuring device (1), for storing the transmission element (5),

that the transfer device (4) comprises at least one roll, which is arranged to move the transmission element (5) in the longitudinal direction by friction,

that the transfer device (4) is arranged rotatably about the longitudinal axis (48) of the protective element (3), and

that the transmission element (5) is arranged to settle within the space delimited by the inner surface (43) of the container (40).

12. A measuring device as claimed in any one of the preceding claims, **characterized** in that the measuring device (1) is arranged in a rock drilling unit (16).

13. A measuring device as claimed in any one of the preceding claims, **characterized** in that the measuring device (1) is arranged in a charging unit (50).

14. A rock drilling unit comprising:
at least one feeding beam (20);

at least one rock drilling apparatus (18), which is movable with respect to the feeding beam (20); and

at least one measuring device (1) for measuring drill holes (12), the measuring device (1) comprising: a frame (2); at least one sensor (6) that may be arranged in a drill hole (12); an elongated transmission element (5) connected to the sensor (6); and at least one transfer device (4), by which the transmission element (5) may be moved longitudinally for moving the sensor (6) in the drill hole (12),

characterized in that

the measuring device (1) includes an elongated protective element (3), into which the sensor (6) is arranged to be moved by means of the transfer device (4).

15. A rock drilling unit as claimed in claim 14, **characterized** in

that the first end portion of the feeding beam (20) comprises a first holder (21) for mounting the measuring device (1), and

that the second end portion of the feeding beam (20) comprises a second holder (23) for mounting at least the sensor of the measuring device (1),

that the measuring device (1) is mountable on the first holder (21) for measuring the drill hole (12) by means of the sensor (6), and

that at least the sensor of the measuring device is mountable on the second holder (23) for positioning and aligning the drilling unit (16) by means of the sensor (6).

16. A rock drilling unit as claimed in claim 14 or 15, **characterized** in

that the rock drilling unit (16) comprises at least one actuator (21) for moving the protective element (3) of the measuring device (1) longitudinally,

that the protective element (3) can be inserted into the drill hole (12), and

that the sensor (6) can be inserted inside the protective element (3) into the drill hole (12).